

IN THE CLAIMS

Please amend claims 1, 6, 16, 18, 26, and 28-29 as indicated below.

1. (Currently Amended) A computer implemented method, comprising:
identifying an operation involving a plurality of input values;
invoking an object associated with the identified operation, the object being predefined based on a type of the identified operation;
performing the operation via the invoked object by invoking a first function member of the object; and
automatically generating, as a part of the operation via the object invoking a second function member of the object, accuracy information associated with the operation for each of the plurality of input values.
2. (Original) The method of claim 1, further comprising:
creating the object associated with the identified operation; and
initializing the object using the plurality of input values prior to performing the operation.
3. (Original) The method of claim 2, further comprising receiving the plurality of input values as parts of parameters associated with the object when the object is created.
4. (Original) The method of claim 1, wherein the object comprises one or more member functions to perform the operation and to substantially concurrently generate the accuracy information associated with the operation.
5. (Original) The method of claim 1, further comprising defining a computational model, as a member of the object, to generate the accuracy information for the operation.

6. (Currently Amended) ~~The method of claim 5, wherein defining the computation model comprises:~~

A computer implemented method, comprising:

identifying an operation involving a plurality of input values;

invoking an object associated with the identified operation, the object including a

computational model as a member of the object to generate accuracy

information for the operation, the computational model being defined by

identifying a theoretical result of the operation based on an input value₁[[;]]

defining an input independent error associated with the input value₁[[;]]

defining an input dependent error associated with the input value₁[[;]] and

obtaining an actual result of the operation based on the theoretical result, the

input independent error, and input dependent error;

performing the operation via the invoked object; and

automatically generating, as a part of the operation via the object, the accuracy

information associated with the operation for each of the plurality of input

values.

7. (Original) The method of claim 6, wherein the actual result of the operation is obtained via a summation of the theoretical result, the input independent error, and input dependent error.
8. (Original) The method of claim 6, wherein the computational model comprises one of a probability density function and one or more upper-bound functions representing the accuracy of the operation.

9. (Original) The method of claim 8, wherein the probability density function represents a probability density of the input independent errors.
10. (Original) The method of claim 8, wherein the one or more upper-bound functions comprise a first upper-bound function and a second upper-bound function, the first upper-bound function representing upper bound values associated with the input dependent errors and the second upper-bound function representing upper bound values associated with the actual results of the operation.
11. (Original) The method of claim 1, wherein the operation comprises one of an addition, a multiplication, and a shifting operation.
12. (Original) The method of claim 1, wherein the accuracy information includes differences between a theoretical result and an actual result of the operation.
13. (Original) The method of claim 1, wherein the plurality of input values comprises multi-dimensional vectors of values.
14. (Original) The method of claim 1, wherein the object is invoked via an inheritance of an object oriented programming (OOP) environment.
15. (Original) The method of claim 14, further comprising overloading an operator associated with the operation via the OOP environment, such that the accuracy information is obtained transparently with respect to the actual operation.
16. (Currently Amended) A machine-readable medium having executable code to cause a machine to perform a method, the method comprising:

identifying an operation involving a plurality of input values;
 invoking an object associated with the identified operation, the object being predefined based on a type of the identified operation;
 performing the operation via the invoked object by invoking a first function member of the object; and
 automatically generating, as a part of the operation via the object invoking a second function member of the object, accuracy information associated with the operation for each of the plurality of input values.

17. (Original) The machine-readable medium of claim 16, wherein the method further comprises defining a computational model, as a member of the object, to generate the accuracy information for the operation.

18. (Currently Amended) ~~The machine-readable medium of claim 17, wherein defining the computation model comprises:~~

A machine-readable medium having executable code to cause a machine to perform a method, the method comprising:

identifying an operation involving a plurality of input values;

invoking an object associated with the identified operation, the object including a

computational model as a member of the object to generate accuracy

information for the operation, the computational model being defined by

identifying a theoretical result of the operation based on an input value₁[[;]]

defining an input independent error associated with the input value₁[[;]]

defining an input dependent error associated with the input value₁[[;]] and

obtaining an actual result of the operation based on the theoretical result, the

input independent error, and input dependent error;

performing the operation via the invoked object; and

automatically generating, as a part of the operation via the object, the accuracy information associated with the operation for each of the plurality of input values.

19. (Original) The machine-readable medium of claim 18, wherein the actual result of the operation is obtained via a summation of the theoretical result, the input independent error, and input dependent error.
20. (Original) The machine-readable medium of claim 18, wherein the computational model comprises one of a probability density function and one or more upper-bound functions representing the accuracy of the operation.
21. (Original) The machine-readable medium of claim 20, wherein the probability density function represents a probability density of the input independent errors.
22. (Original) The machine-readable medium of claim 20, wherein the one or more upper-bound functions comprise a first upper-bound function and a second upper-bound function, the first upper-bound function representing upper bound values associated with the input dependent errors and the second upper-bound function representing upper bound values associated with the actual results of the operation.
23. (Original) The machine-readable medium of claim 16, wherein the operation comprises one of an addition, a multiplication, and a shifting operation.
24. (Original) The machine-readable medium of claim 16, wherein the object is invoked via an inheritance of an object oriented programming (OOP) environment.

25. (Original) The machine-readable medium of claim 24, wherein the method further comprises overloading an operator associated with the operation via the OOP environment, such that the accuracy information is obtained transparently with respect to the actual operation.
26. (Currently Amended) A data processing system, comprising:
a processor;
a memory coupled to the processor; and
a process executed by the processor from the memory to cause the processor to
identify an operation involving a plurality of input values,
invoke an object associated with the identified operation, the object being predefined based on a type of the identified operation,
perform the operation via the invoked object by invoking a first function member of the object, and
automatically generate, as a part of the operation via the object invoking a second function member of the object, accuracy information associated with the operation for each of the plurality of input values.
27. (Original) The data processing system of claim 26, wherein the process further causes the processor to define a computational model, as a member of the object, to generate the accuracy information for the operation.
28. (Currently Amended) ~~The data processing system of claim 27, wherein defining the computation model comprises:~~
A data processing system, comprising:
a processor;
a memory coupled to the processor; and

a process executed by the processor from the memory to cause the processor to
identify an operation involving a plurality of input values,
invoke an object associated with the identified operation, the object including a
computational model as a member of the object to generate accuracy
information for the operation, the computational model being defined
by
identifying a theoretical result of the operation based on an input
value₁[[;]]
defining an input independent error associated with the input value₁[[;]]
defining an input dependent error associated with the input value₁[[;]]
and
obtaining an actual result of the operation based on the theoretical
result, the input independent error, and input dependent error,
perform the operation via the invoked object, and
automatically generate, as a part of the operation via the object, the accuracy
information associated with the operation for each of the plurality of
input values.

29. (Currently Amended) ~~The data processing system of claim 27,~~

A data processing system, comprising:

a processor;

a memory coupled to the processor; and

a process executed by the processor from the memory to cause the processor to

identify an operation involving a plurality of input values,

invoke an object associated with the identified operation, the object including a

computational model as a member of the object to generate accuracy

information for the operation,

perform the operation via the invoked object, and
automatically generate, as a part of the operation via the object, the accuracy
information associated with the operation for each of the plurality of
input values,

wherein the computational model comprises one of a probability density
function and one or more upper-bound functions representing the
accuracy of the operation.

30. (Original) The data processing system of claim 29, wherein the probability density
function represents a probability density of the input independent errors, and wherein the one
or more upper-bound functions comprise a first upper-bound function and a second upper-
bound function, the first upper-bound function representing upper bound values associated
with the input dependent errors and the second upper-bound function representing upper
bound values associated with the actual results of the operation.